Reviewer’s report

Title: Does comorbidity explain the ethnic inequalities in cervical cancer survival in New Zealand? A retrospective cohort study

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Reviewer: Mette Nørgaard

Reviewer’s report:

The manuscript “Does comorbidity explain the ethnic inequalities in cervical cancer survival in New Zealand? A retrospective cohort study” aims to address whether differences in comorbidity can explain the ethnic differences in cervical cancer survival in New Zealand. This is a relevant and well-defined question. However, the focus of the manuscript tends to be put on the question “How can co-morbidity be measured?” Because of this inconsistency the paper can not be recommended for publication in its present form.

Major compulsory Revisions:

The authors present 5 different ways of measuring comorbidity:
1) Charlson comorbidity Index based on diseases recorded within one year prior to cervical cancer
2) Charlson comorbidity Index based on diseases recorded within five year prior to cervical cancer.
3) Elixhauser method based on diseases recorded within one year prior to cervical cancer.
4) Elixhauser method based on diseases recorded within five year prior to cervical cancer.
5) Inclusion of the 12 individual comorbidities with a HR# 1.5 when comparing women with cervical cancer with and without this comorbidity.

There is no discussion on potential strengths and weaknesses between these five methods in relation to ethnicity and cervical cancer survival. There are several studies comparing different comorbidity measures which can be used in such a discussion e.g. Schneeweiss & Maclure.


Moreover, the authors do not present any argumentation on why it is necessary to include five different ways of measuring comorbidity to answer their study question. It seems to me that each of the five methods give the exact same answer to the research question i.e. that differences in comorbidity does not explain the ethnic differences in cervical cancer survival in New Zealand – so why present five different ways of getting to this answer?? It is sufficient to
present only one method and then simply state that using different measures of comorbidity did not change these results substantially.

The authors discuss that the greatest change in Ethnic specific HR’s occurred when the 12 selected individual comorbid conditions were used in the model. Since these 12 conditions were selected because of their strong association with death in this specific dataset the finding is not really surprising. If the authors will compare the different methods, they should use another approach with proper statistical methods such as ROC curves, Hoshmer Lemeshow test etc instead of simply looking at the change in estimate.

Examining cause of death in cancer patients with and without comorbidity is not a trivial task. Patients with two potential lethal conditions will by nature have a different distribution in courses of death than patients with just one potential lethal diagnosis. Therefore, Patients with cervical cancer and comorbidity will of course have a higher mortality of causes other than cancer since some of them will die of their comorbidity instead of their cancer – this need to be addressed.

In the study population 555 women were excluded because of lacking Figo stage – leaving 1594 in the analyses. If information on comorbidity and on ethnicity is available in these 555 women, excluding them is loss of usable information. Particularly in Table 3 the estimates are quite imprecise. Therefore, including 30% more women seems like a good idea.

The influence of the missing Figo stages could be addressed using some sort of sensitivity analysis

The estimates in Table 3 are adjusted for age, year of diagnosis, stage, ethnicity, NZDep, and residence. A rule of thumb is that there has to be at least 10 cases per confounder variable

Since there are fewer than 60 persons in many of the strata the number of confounders has to be reduced.

Minor essential revisions

A description of how time of follow-up us measured is lacking. When are the patients censored?

In table 3 the reference group is not clear – is it all women without a given comorbid disease or is it women without any comorbid diseases?

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I declare that I have no competing interests